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EXAMINER	
TAYONG, HELENE E	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/522,757	RICHARDSON, MICHAEL RICHARD	
	Examiner	Art Unit	
	HELENE TAYONG	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 December 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-8 and 12-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-8 and 12-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 January 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/23/09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the amendment filed on 12/04/09

Claims 2-8 and 12-23 are pending in this application and have been considered below.

Response to Arguments

2. Applicant's arguments with respect to rejection of Claims 2-8 and 12-23 under 35 U.S.C. § 103(a) as being unpatentable over Mege et al., U.S. Pat. Pub. 2001/0005406 (hereinafter "Mege") in view of Critchlow, U.S. Patent No. 5,276,706, and further in view of Zhou, U.S. Patent No. 6,859,491 have been considered but are moot in view of the new ground(s) of rejection because of amendment.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2-8 and 12-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mege et al (US (20010005406) in view of Critchlow (US 5276706) and further in view of Liu (20050147188).

(1) with regards to claims 20 and 23;

Mege et al in (fig. 2) discloses a method of regenerating a remotely transmitted signal (pg. 3, [0037]) comprising a symbol stream (fig. 1, (5) modulated (1) onto a carrier (3) in accordance with a predetermined standard (fig. 1 and 3, pg. 3, [0028]), the method including the steps of:

a) receiving the remotely transmitted signal having known characteristics (fig. 2, 10 and 9, pg. 3, [0037]);

b) determining frame timing of the received signal (fig. 2, 11, pg.3, [0039]-[0040]);

c) identifying the locations of sequences (synchronization pattern) within the signal from the frame timing (fig. 2, 11, pg.4, [0041]-[0044], page 5, [0057]);

d) identifying the structure of the sequences (page 3, [0036], page 5, [0066], pg. 7, [0067] and [0073]);

e) estimating phase shift values (ST) at the locations of the sequences (page 3, [0040], pg. 4, [0046]-0053]);

f) demodulating (fig. 2, 12) the symbol stream using the estimated phase shift (ST) values and the structure of the sequences (page 3, [0039], pg. 4, [0045]); and

g) remodulating (fig. 5, 1) the symbol stream (page 6, [0069], [0079], [0080]-[0082]);

wherein the sequences include one training sequences, synchronization signals (fig. 1,5, fig. 2, 11), frequency correction bursts (SF) (page 4, [0041]) (page 3, [0031]-0036], page 3, [0092], Table 1 and page 4, [0054]).

Mege et al discloses all of the subject matter disclosed above, but for specifically teaching

(a) estimating mean beat frequency

(b) wherein the training sequences include eight training sequences associated with data bursts and a ninth training sequence associated with dummy bursts containing no data.

(i) with regards to item (a) above;

However, Critchlow in the same endeavor (communication systems) discloses a system and method for minimizing frequency offsets (beat frequency) between digital communications. In (fig.1, 36), known sync pattern is rotated by a pattern rotator 37 to simulate fixed frequency offsets. The known sync patter 36 is correlated with the sampled data by correlator 30 for a number of phase advances corresponding to the simulated fixed frequency offsets. The peak outputs 54 and 58 for the correlator 30 for the number of fixed frequency offsets is used to adjust the receivers voltage oscillator to reduce the offset (col.1, lines 59-67, col. 5, lines 37-68 and col. 6, lines 1-36).

One of ordinary skilled in the art at the time the applicant's invention was made would have been able to modify the invention of Meye et al as taught by Critchlow and estimate frequency offsets , thus reducing frequency offsets, proper frequency acquisition and less costly precision voltage controlled oscillators (col. 2, lines 52-57).

(ii) with regards to item (b) above;

However Liu discloses identifyling the training sequences of an arbitrary set of or all received burst (see abstract). On page 2, [0034]) Liu discloses **eight different**

sequences are used for normal burst (associated with data burst) and a **ninth "training sequence"** is used for dummy burst (associated with dummy burst). Liu is silent about dummy burst containing no data.

It is further evidence by Tynderfeldt et al (US 2008 0025266 A1) that the **dummy burst contains no intelligent information** to mobile terminals (see abstract, figs. 6,7).

It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have utilized the method as taught by Liu in the method of Meye et al as taught by Critchlow in a manner as claimed in this application for the benefit of synchronizing communication devices.

(2) with regards to claim 2;

Mege et al further discloses wherein step f) comprises the additional step of correcting the symbol stream prior to step g (fig. 6, 42 and 43, pg. 7, [0084]-[0085]).

(3) with regards to claim 3;

Mege et al further discloses wherein the step of correcting the symbol stream incorporates substitution of symbols in the symbol stream where the symbol stream is known a priori (page 3, [0031], [0038], fig. 6, 42 and 43, page 7, [0085]).

(4) with regards to claims 4,14 and 17;

Mege et al discloses all of the subject matter disclosed above, but for specifically teaching wherein step f) further comprises comparing demodulated symbols with known symbols to provide an estimate of the symbol error rate.

However, Critchlow in the same endeavor (regeneration of signals) discloses a system and method for minimizing frequency offsets (beat frequency) between digital communications. In (fig. 1, 36), known sync pattern is rotated by a pattern rotator 37 to simulate fixed frequency offsets. The known sync patter 36 is correlated with the sampled data by correlator 30 for a number of phase advances corresponding to the simulated fixed frequency offsets. The peak outputs 54 and 58 for the correlator 30 for the number of fixed frequency offsets is used to adjust the receivers voltage oscillator to reduce the offset (col.1, lines 59-67, col. 5, lines 37-68 and col. 6, lines 1-36).

One of ordinary skilled in the art at the time the applicant's invention was made would have been able to modify the invention of Meye et al as taught by Critchlow and estimate frequency offsets , thus reduced frequency offsets, proper frequency acquisition and less costly precision voltage controlled oscillators (col. 2, lines 52-57).

(5) with regards to claims 5,15 and 18;

Mege et al implicitly discloses in (fig. 2, (9) a radio stage) includes down converting the received signal to a nominal 0Hz intermediate frequency (page 3, [0037]).

(6) with regards to claims 6, 16 and 19;

Mege et al discloses in (fig. 2, (9) a radio stage) wherein step a) further includes digitizing the intermediate frequency signal to provide a digitized symbol stream in a complex signal domain (page 3, [0037]).

(7) with regards to claims 7;

Mege et al discloses samples of the synchronization patterns are stored in a memory 15 of the module 11 (fig. 4, 15 and pg. 4, [0046]), but does not specifically teach estimating mean beat frequency

However, Critchlow in the same endeavor (regeneration of signals) discloses a system and method for minimizing frequency offsets (beat frequency) between digital communications. In (fig. 1, 36), known sync pattern is rotated by a pattern rotator 37 to simulate fixed frequency offsets. The known sync patter 36 is correlated with the sampled data by correlator 30 for a number of phase advances corresponding to the simulated fixed frequency offsets. The peak outputs 54 and 58 for the correlator 30 for the number of fixed frequency offsets is used to adjust the receivers voltage oscillator to reduce the offset (col.1, lines 59-67, col. 5, lines 37-68 and col. 6, lines 1-36).

One of ordinary skilled in the art at the time the applicant's invention was made would have been able to modify the invention of Meye et al as taught by Critchlow and estimate frequency offsets and store in the memory, thus reduced frequency offsets, proper frequency acquisition and less costly precision voltage controlled oscillators (col. 2, lines 52-57).

(8) with regards to claim 8;

Mege et al further discloses wherein step e) further includes estimating residual phase shift of the signal and storing the estimated residual phase shift of the signal in the database (fig. 4, 14, pg.4, [0046]-[0053]).

(9) with regards to claim 12;

Mege et al further discloses the step of using training sequences (fig. 5, 11) and correlation peaks (fig. 4) for multi-path compensation (fig. 6, 42 and 43, pg. 7, [0084]-[0085]).

(10) with regards to claim 13;

Mege et al further discloses wherein channel estimation (RC) of data sequences are used for multi-path compensation (page 4, [0043]-0045]) .

(11) with regards to claim 21;

Mege et al further wherein the training sequences include eight training sequences (several different synchronization sequences) associated with data bursts (fig. 2,5, page 4, [0054]).

(12) with regards to claim 22;

Mege et al further discloses using channel estimation of data sequences for multi-path compensation (page 4, [0044]).

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HELENE TAYONG whose telephone number is (571)270-1675. The examiner can normally be reached on Monday-Friday 8:00 am to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Liu Shuwang can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Helene Tayong/
Examiner, Art Unit 2611

February 27, 2010

/Shuwang Liu/

Supervisory Patent Examiner, Art Unit 2611